Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife
Route 135, Westborough, MA 01581

Telephone: (508) 389-6360/Fax: (508) 389-7891
www.nhesp.org

Scarlet Bluet Damselfly

Enallagma pictum

State Status: **Threatened**
Federal Status: None

DESCRIPTION OF ADULT: The Scarlet Bluet is a small, semi-aquatic insect of the order Odonata, suborder Zygoptera (the damselflies), and family Coenagrionidae (pond damsels). Like most damselflies, Scarlet Bluets have large eyes on the sides of the head, short antennae, and four heavily veined wings that are held folded together over the back. The eyes are red with a small red spot behind each eye on the back of the head, which is black. The spots are connected by a thin red bar. The Scarlet Bluet has a long, slender abdomen, composed of ten segments. The abdominal segments are orange below and black above. The male's thorax (winged and legged section behind the head) is red with black stripes on the "shoulders" and top. Females are similar in appearance, but have a duller yellow thorax and thicker abdomens than the males.

Scarlet Bluets average just over one inch (26 mm to 29 mm) in length.

SIMILAR SPECIES: The Bluets (genus *Enallagma*) comprise a large group of damselflies, with no fewer than 20 species in Massachusetts. However, this is the only red Bluet in the Northeast; the majority of bluets are blue, with the exception of one yellow, one orange, and one red species. The Eastern Red Damsel (*Amphiagrion saucium*) is also red, but is smaller, and the abdomen is entirely red, unlike the Scarlet Bluet, whose abdomen is black above and orange below. The Orange Bluet (*E. signatum*) is also similar, but not as red, and the second to last abdominal segment is entirely orange, unlike the Scarlet Bluet, which is black above and orange below. The Vesper Bluet (*E. vesperum*) bears some resemblance, but is more yellow overall and the tip of the abdomen is blue.

HABITAT: Scarlet Bluets are found in acidic, sandy ponds (including coastal plain ponds) with floating vegetation, often with water lilies (*Nuphar* and *Nymphaea*). Nymphs are aquatic and live among the aquatic vegetation. Adults spend much of their time flying out over the water, alighting on lily pads. Before they are sexually mature, the adults inhabit nearby uplands.

LIFE-HISTORY/BEHAVIOR: The flight season of the Scarlet Bluet lasts from late June through August.

Although little has been published on the life history of the Scarlet Bluet, it is likely similar to other, better-studied species in the genus. All odonates have three life stages: the egg, the aquatic nymph, and flying adult. The nymphs are slender with three leaf-like appendages extending from the end of the body which serve as breathing gills. They have a large, hinged lower jaw which they are able to extend forward with lightning speed. This feature is used to catch prey, the nymph typically lying in wait until potential prey passes within striking range. They feed on a wide variety of aquatic life, including insects and worms. They spend most of their time clinging to submerged vegetation or other objects, moving infrequently. They transport themselves primarily by walking, but are also capable of swimming with a sinuous, snake-like motion.

Scarlet Bluets have a one-year life cycle. The eggs are laid during the early summer and probably hatch in the fall. The nymphs develop over the winter and spring, undergoing several molts. In early to mid-summer the nymphs crawl up on emergent vegetation and begin their transformation into adults.

SCARLET BLUET FLIGHT PERIOD

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

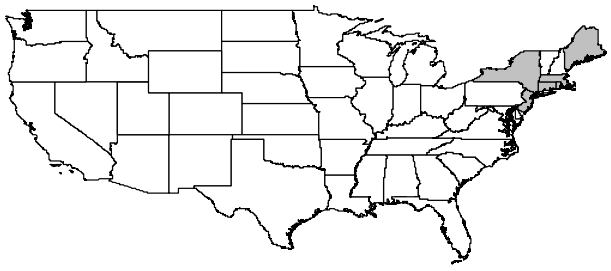
Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form as these donations comprise a significant portion of our operating budget.

This process, known as emergence, typically takes a couple of hours, after which the newly emerged adults (tenerals) fly weakly off to upland areas where they spend a week or two feeding and maturing. The young adults are very susceptible to predators, particularly ants and spiders during emergence, and birds during the teneral stage. Mortality is high during these periods. The adults feed on a wide variety of smaller insects.

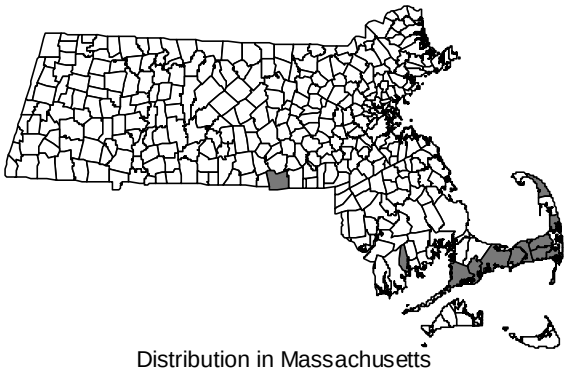
When mature, adults return to the wetlands. When they locate a female, the male attempts to grasp her behind the head with the terminal appendages at the end of his abdomen. If the female is receptive, she allows the male to grasp her, then curls the end of her abdomen up to the base of the male's abdomen where his secondary sexual organs ("hamules") are located. This coupling results in the heart-shaped tandem formation characteristic of all odonates. This coupling lasts for a few minutes to an hour or more. The pair generally remains stationary during this mating but, amazingly, can fly, albeit weakly, while coupled.

Once mating is complete, the female begins laying eggs (ovipositing) in aquatic vegetation, including the underside of lily pads, using the ovipositor on the underside of her abdomen to slice into the vegetation and deposit eggs. Although the female occasionally oviposits alone, in most cases the male remains attached to the back of the females head. This form of mate-guarding is thought to prevent other males from mating with the female before she completes egg-laying. The adult's activities are almost exclusively limited to feeding and reproduction, and their life is short, probably averaging only three to four weeks for damselflies like the Scarlet Bluet.

RANGE: The Scarlet Bluet is a regional endemic and has a very small range restricted to scattered locations in the northeastern United States from New Jersey to southern Maine.



Range of Species in US



Distribution in Massachusetts
1977 - 2002
Based on records in Natural Heritage Database

POPULATION STATUS IN MASSACHUSETTS: The Scarlet Bluet is listed as a Threatened Species in Massachusetts. The species is known mainly from southeastern portions of Massachusetts, primarily Barnstable and Plymouth counties. There are also a few records from south-central and possibly northeastern Massachusetts.

MANAGEMENT RECOMMENDATIONS: The major threat to the Scarlet Bluet is degradation and destruction of the wetlands which are its breeding and nymphal habitat. Threats include construction and development, artificial drawdown of pond water-level by groundwater pumping, and run-off from roadways and sewage. In addition, high-impact recreational use such as off road vehicles driving through pond shores, which may destroy breeding and nymphal habitat, and motor boats, whose wakes swamp delicate emerging adults, are threats. Since Scarlet Bluets, like many species of damselflies, spend a period of several days or more away from the pond maturing, it is important to maintain natural upland habitats adjoining the breeding sites for roosting and hunting. Without protected uplands the delicate newly emerged adults are more susceptible to predation and mortality from inclement weather.

REFERENCES:

Nikula, B., J. L. Loose, and M. R. Burne. 2003. A Field Guide to the Dragonflies and Damselflies of Massachusetts. Massachusetts Natural Heritage and Endangered Species Program.

Walker, E. M. 1953. The Odonata of Canada and Alaska, Vol. I. University of Toronto Press.

Westfall, M. J., Jr., and M. L. May. 1996. Damselflies of North America. Scientific Publishers.

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form as these donations comprise a significant portion of our operating budget.

Updated May 2003